

# Technical data sheet

## Energetic diffuse sensor

Part no.: 50138499  
ET23/2X-M8



For illustration purposes only

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## Technical data

### Basic data

|                     |                              |
|---------------------|------------------------------|
| Series              | 23                           |
| Operating principle | Diffuse reflection principle |

### Optical data

|                                  |                                      |
|----------------------------------|--------------------------------------|
| Operating range                  | Guaranteed operating range           |
| Operating range, white 90%       | 0 ... 0.56 m                         |
| Operating range, black 6%        | 0.025 ... 0.22 m                     |
| Operating range limit, white 90% | 0 ... 0.7 m                          |
| Operating range limit, black 6%  | 0.02 ... 0.29 m                      |
| Operating range limit            | Typical operating range              |
| Adjustment range                 | 60 ... 560 mm                        |
| Light source                     | LED, Red                             |
| Wavelength                       | 645 nm                               |
| Transmitted-signal shape         | Pulsed                               |
| LED group                        | Exempt group (in acc. with EN 62471) |

### Electrical data

|                    |                              |
|--------------------|------------------------------|
| Protective circuit | Polarity reversal protection |
|                    | Short circuit protected      |

### Performance data

|                      |                                        |
|----------------------|----------------------------------------|
| Supply voltage $U_B$ | 10 ... 30 V, DC, Incl. residual ripple |
| Residual ripple      | 0 ... 15 %, From $U_B$                 |
| Open-circuit current | 0 ... 20 mA                            |

### Outputs

|                                     |            |
|-------------------------------------|------------|
| Number of digital switching outputs | 1 Piece(s) |
|-------------------------------------|------------|

### Switching outputs

|                         |                                               |
|-------------------------|-----------------------------------------------|
| Type                    | Digital switching output                      |
| Voltage type            | DC                                            |
| Switching current, max. | 100 mA                                        |
| Switching voltage       | high: $\geq(U_B - 2.5V)$<br>low: $\leq 2.5 V$ |

### Switching output 1

|                     |                     |
|---------------------|---------------------|
| Assignment          | Connection 1, pin 4 |
| Switching element   | Transistor, NPN     |
| Switching principle | Light switching     |

### Time behavior

|                     |        |
|---------------------|--------|
| Switching frequency | 500 Hz |
| Response time       | 1 ms   |
| Readiness delay     | 300 ms |

### Connection

|                       |            |
|-----------------------|------------|
| Number of connections | 1 Piece(s) |
|-----------------------|------------|

### Connection 1

|                    |                |
|--------------------|----------------|
| Function           | Signal OUT     |
|                    | Voltage supply |
| Type of connection | Connector      |
| Thread size        | M8             |
| Type               | Male           |
| Material           | Plastic        |
| No. of pins        | 4 -pin         |

### Mechanical data

|                                                |                             |
|------------------------------------------------|-----------------------------|
| Dimension (W x H x L)                          | 11.4 mm x 34.2 mm x 18.3 mm |
| Housing material                               | Plastic                     |
| Plastic housing                                | PC-ABS                      |
| Lens cover material                            | Plastic / PMMA              |
| Net weight                                     | 10 g                        |
| Housing color                                  | Black                       |
|                                                | Red                         |
| Recommended tightening torque for M3 fastening | 0.9 N·m                     |

### Operation and display

|                                     |                         |
|-------------------------------------|-------------------------|
| Type of display                     | LED                     |
| Number of LEDs                      | 2 Piece(s)              |
| Operational controls                | Multiturn potentiometer |
| Function of the operational control | Range adjustment        |

### Environmental data

|                                |               |
|--------------------------------|---------------|
| Ambient temperature, operation | -40 ... 60 °C |
| Ambient temperature, storage   | -40 ... 70 °C |

### Certifications

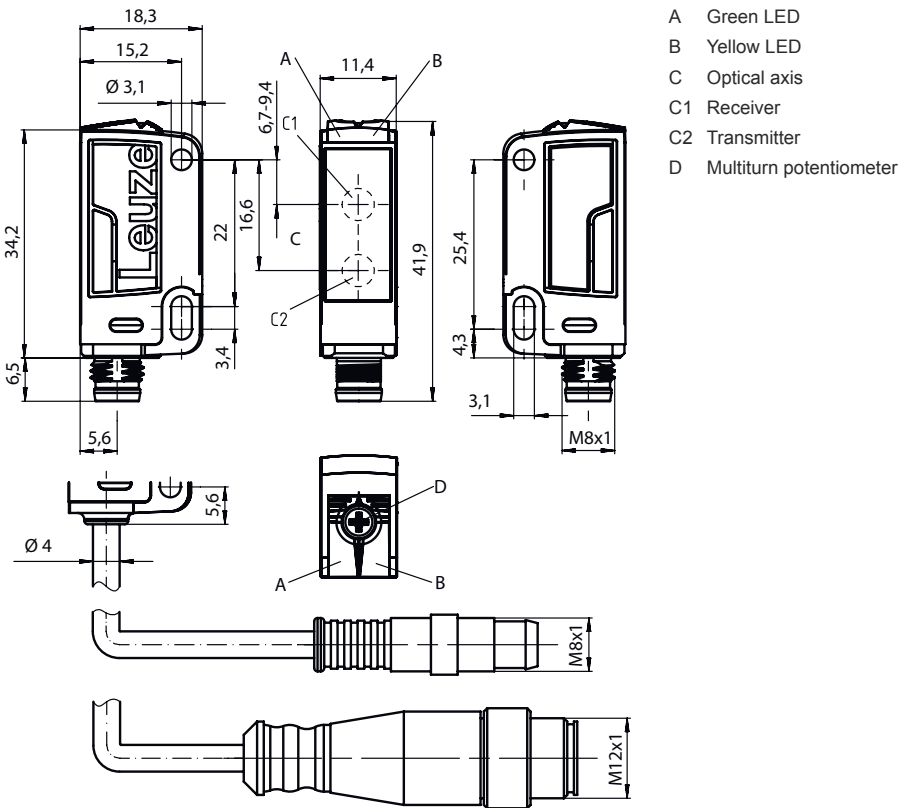
|                      |               |
|----------------------|---------------|
| Degree of protection | IP 67         |
| Protection class     | III           |
| Approvals            | c UL US       |
| Standards applied    | IEC 60947-5-2 |

### Classification

|                       |          |
|-----------------------|----------|
| Customs tariff number | 85365019 |
| ECLASS 5.1.4          | 27270903 |
| ECLASS 8.0            | 27270903 |
| ECLASS 9.0            | 27270903 |
| ECLASS 10.0           | 27270903 |
| ECLASS 11.0           | 27270903 |
| ECLASS 12.0           | 27270903 |
| ECLASS 13.0           | 27270903 |
| ECLASS 14.0           | 27270903 |
| ECLASS 15.0           | 27270903 |
| ETIM 5.0              | EC001821 |
| ETIM 6.0              | EC001821 |
| ETIM 7.0              | EC001821 |
| ETIM 8.0              | EC001821 |
| ETIM 9.0              | EC001821 |
| ETIM 10.0             | EC001821 |

Dimensioned drawings

All dimensions in millimeters

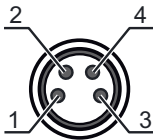


Electrical connection

Connection 1

|                    |                |
|--------------------|----------------|
| Function           | Signal OUT     |
|                    | Voltage supply |
| Type of connection | Connector      |
| Thread size        | M8             |
| Type               | Male           |
| Material           | Plastic        |
| No. of pins        | 4 -pin         |

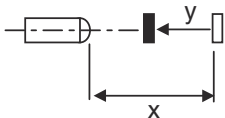
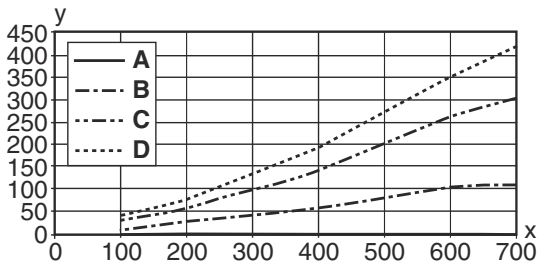
| Pin | Pin assignment |
|-----|----------------|
| 1   | V+             |
| 2   | n.c.           |
| 3   | GND            |
| 4   | OUT 1          |



Diagrams

Typ. black/white behavior

- A White 90%
- B Gray 50%
- C Gray 18%
- D Black 6%



Operation and display

| LED | Display                  | Meaning               |
|-----|--------------------------|-----------------------|
| 1   | Yellow, continuous light | Object detected       |
| 2   | Green, continuous light  | Operational readiness |

Part number code

Part designation: AAA23.GJ/ ff-HH

|       |                                                                                                                                                                                                                                                                                                                                                                                        |
|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AAA23 | <b>Operating principle / construction</b><br>HT23: diffuse reflection sensor with background suppression<br>PRK23: retro-reflective photoelectric sensor with polarization filter<br>LS23: throughbeam photoelectric sensor transmitter<br>LE23: throughbeam photoelectric sensor receiver<br>ET23: energetic diffuse reflection sensor<br>FT23: diffuse reflection sensor with fading |
| G     | <b>Equipment</b><br>T: autocollimation principle (single lens) for highly transparent bottles without tracking                                                                                                                                                                                                                                                                         |
| J     | <b>Operating range adjustment</b><br>3: teach-in via button                                                                                                                                                                                                                                                                                                                            |
| ff    | <b>Switching output / function / OUT1OUT2 (OUT1 = pin 4, OUT2 = pin 2)</b><br>2: NPN transistor output, light switching<br>N: NPN transistor output, dark switching<br>4: PNP transistor output, light switching<br>P: PNP transistor output, dark switching<br>X: pin not used                                                                                                        |

## Part number code

HH

**Electrical connection**

n/a: cable, standard length 2000 mm, 3-wire  
 M8: M8 connector, 4-pin (plug)  
 200-M12: cable, length 200 mm with M12 connector, 4-pin, axial (plug)  
 M12: M12 connector, 4-pin (plug)  
 200-M8: cable, length 200 mm with M8 connector, 4-pin, axial (plug)

**Note**

A list with all available device types can be found on the Leuze website at [www.leuze.com](http://www.leuze.com).

## Notes

**Observe intended use!**

- ⚡ This product is not a safety sensor and is not intended as personnel protection.
- ⚡ The product may only be put into operation by competent persons.
- ⚡ Only use the product in accordance with its intended use.

**For UL applications:**

- ⚡ Only for use in "class 2" circuits
- ⚡ These proximity switches shall be used with UL Listed Cable assemblies rated 30V, 0.5A min, in the field installation, or equivalent (categories: CYJV/CYJV7 or PVVA/PVVA7)

## Further information

- With the set scanning range, a tolerance of the operating range is possible depending on the reflection properties of the material surface.

## Accessories

### Connection technology - Connection cables

|                                                                                     | Part no. | Designation       | Article          | Description                                                                                                                                                             |
|-------------------------------------------------------------------------------------|----------|-------------------|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 50130850 | KD U-M8-4A-V1-050 | Connection cable | Connection 1: Connector, M8, Axial, Female, 4 -pin<br>Connector, LED: No<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 5.000 mm<br>Sheathing material: PVC |

## Accessories

|                                                                                  | Part no. | Designation       | Article          | Description                                                                                                                                                              |
|----------------------------------------------------------------------------------|----------|-------------------|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 50130871 | KD U-M8-4W-V1-050 | Connection cable | Connection 1: Connector, M8, Angled, Female, 4 -pin<br>Connector, LED: No<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 5.000 mm<br>Sheathing material: PVC |

## Mounting technology - Mounting brackets

|                                                                                   | Part no. | Designation   | Article             | Description                                                                                                                                                                                                                   |
|-----------------------------------------------------------------------------------|----------|---------------|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 50118542 | BT 200M.5     | Mounting bracket    | Design of mounting device: Angle, L-shape<br>Fastening, at system: Through-hole mounting<br>Mounting bracket, at device: Screw type, Suited for M3 screws<br>Type of mounting device: Adjustable<br>Material: Stainless steel |
|   | 50124651 | BT 205M-10SET | Mounting device set | Design of mounting device: Angle, L-shape<br>Fastening, at system: Through-hole mounting<br>Mounting bracket, at device: Screw type<br>Type of mounting device: Rigid<br>Material: Metal                                      |

## Mounting technology - Rod mounts

|                                                                                     | Part no. | Designation  | Article         | Description                                                                                                                                                                                                                                                  |
|-------------------------------------------------------------------------------------|----------|--------------|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 50117829 | BTP 200M-D12 | Mounting system | Design of mounting device: Protection hood<br>Fastening, at system: For 12 mm rod<br>Mounting bracket, at device: Screw type<br>Type of mounting device: Clampable, Adjustable, Turning, 360°<br>Material: Metal                                             |
|  | 50117255 | BTU 200M-D12 | Mounting system | Design of mounting device: Mounting system<br>Fastening, at system: For 12 mm rod, Sheet-metal mounting<br>Mounting bracket, at device: Screw type, Suited for M3 screws<br>Type of mounting device: Clampable, Adjustable, Turning, 360°<br>Material: Metal |

### Note



A list with all available accessories can be found on the Leuze website in the Download tab of the article detailed page.